Complete Summary

GUIDELINE TITLE

Fall prevention for older adults.

BIBLIOGRAPHIC SOURCE(S)

Lyons SS. Fall prevention for older adults. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; 2004 Feb. 60 p. [104 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Injuries resulting from falls

GUIDELINE CATEGORY

Prevention

CLINICAL SPECIALTY

Geriatrics
Nursing

INTENDED USERS

Advanced Practice Nurses
Nurses

GUIDELINE OBJECTIVE(S)

- To reduce the number of falls among elderly patients
- To reduce injuries sustained during falls

TARGET POPULATION

Older adults

INTERVENTIONS AND PRACTICES CONSIDERED

1. Assessment of patient´s risk for falls, including health history, physical examination, vital signs, visual acuity, grip strength, range of motion, cardiovascular assessment, musculoskeletal assessment, neurological assessment, and skin assessment
2. Assessment of patient's functioning in the following areas: balance gait, precipitating behaviors, physical status, cognitive function, functional status, psychosocial, environmental, and risk behavior
3. Fall prevention
4. Activity therapy
5. Area restriction
6. Body mechanics promotion
7. Environmental management safety
8. Exercise therapy: balance
9. Urinary elimination management
10. Urinary incontinence care
11. Restraint reduction programs
12. Environmental actions

MAJOR OUTCOMES CONSIDERED

- Reduction of fall frequency
- Severity of falls
- Patient fall rate

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Databases used include CINAHL, Medline, and PsychLit

NUMBER OF SOURCE DOCUMENTS

More than 100 source documents

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

A = Evidence from well-designed meta-analysis, or well-done synthesis reports such as those from the Agency for Healthcare Policy and Research (AHRQ), or the American Geriatric Society (AGS).

B = Evidence from well-designed controlled trials, both randomized and nonrandomized, with results that consistently support a specific action (e.g., assessment, intervention or treatment)

C = Evidence from observational studies (e.g., correlational descriptive studies) or controlled trials with inconsistent results

D = Evidence from expert opinion or multiple case reports

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Reviewed by two experts using a common critique format.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Informal Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The grades for the strength of the evidence (A-D) are provided at the end of the "Major Recommendations" field.

Note from the National Guideline Clearinghouse (NGC): A five-step algorithm for fall prevention for older adults is presented in the original guideline document. Steps 1, 2, and 3 review the multidimensional falls assessment, Step 4 summarizes falls interventions, and Step 5 outlines falls evaluation. An overview of the steps included in the algorithm is presented below.

Multidimensional Falls Assessment

Fall History (Step 1)

Detecting a history of falls is a crucial component of this protocol. ALL older adults presenting to ANY health care facility or provider are asked about their recent fall history ("Guideline for the prevention of falls," 2001. Evidence Grade = A). This recommendation includes older adults who are patients in primary care, acute care, and home health care settings as well as residents of long-term care and assisted living facilities.

1. Ask all older adults and/or their caregiver about the occurrence of falls during the past year.
2. If the older adult and/or their caregiver REPORTS NO FALL OR A SINGLE FALL in the past year, assess their fall potential (Step 2).
3. If the older adult and/or their caregiver REPORTS RECURRENT FALLS in the past year, or if the older adult PRESENTS FOLLOWING A FALL, complete a COMPREHENSIVE FALL EVALUATION (Step 3).

For residents of long-term care facilities, the Minimum Data Set (MDS) can be used to determine an individual´s fall history if the resident has had no fall in the past 180 days or only a single fall in the past 30 days (MDS Item J4a) or past 31 to 180 days (MDS item J4b), GO TO STEP 2: FALL POTENTIAL. If the resident has had more than one fall, GO TO STEP 3: COMPREHENSIVE FALL EVALUATION.

Fall Potential (Step 2)

For persons who are at relatively low risk for falling (reports no fall or single fall in the past year in Step 1), determination of the person´s fall potential is recommended ("Guideline for the prevention of falls," 2001. Evidence Grade = A). A fall potential assessment includes a review of the circumstances surrounding the previous fall (if they have fallen) and a brief assessment of gait and balance using a tool such as the Timed "Up & Go" Test (Podsiadlo & Richardson, 1991) found in Appendix C in the original guideline document. For older adults and/or their

caregivers who report no fall or a single fall in the past year, determine the older adult´s fall potential using the Falls Screening Tool in Appendix B in the original guideline document.

Identify the circumstances surrounding any fall that occurred during the past year. This assessment includes the location of fall, activity prior to fall, loss of consciousness, use of walking aids (e.g., cane, walker) and/or protective devices (e.g., hip protectors, helmet), environmental conditions (e.g., snow, ice), and injuries that resulted from the fall. If another person witnessed the fall, his or her account of the fall is included.

Information for assessing fall circumstances in long-term care residents using the MDS is included in the Fall Circumstances in Long-term Care Residents (See Appendix D in the original guideline document).

Screen for gait and balance problems using the Timed "Up & Go" Test (Podsiadlo & Richardson, 1991) or similar gait and balance assessment tool (Mathias, Nayak, & Isaacs, 1986). Instructions for the Timed "Up & Go" Test are included in Appendix C in the original guideline document.

- Individuals with an average score of 10 seconds or less on the Timed "Up & Go" Test are freely mobile and are considered to have a low risk of future falls. No further fall assessment is needed.
- Persons with an average score of 11 to 19 seconds on the Timed "Up & Go" Test are independently mobile and considered to have a low to moderate risk of future falls. For this group of individuals, further brief risk factor screening may include identifying other risk factors using the Fall Risk Factors Checklist (Appendix A in the original guideline document) or conducting a targeted fall evaluation of modifiable risk factors (for example, medication review or vision assessment). Information about fall prevention strategies should be presented and modifiable risk factors addressed. The risk assessment should be done to target fall prevention strategies for that individual (Oliver, Hopper, & Seed, 2000. Evidence Grade = A).
- Individuals with an average score of 20 to 29 seconds on the Timed "Up & Go" Test have variable mobility and are considered to have a moderate to high risk of future falls. A comprehensive fall evaluation (See Step 3 below) to identify individual fall risk factors is strongly recommended. Fall prevention information, referral to appropriate specialists for further assessment and treatment (for example, gerontological nurse practitioner, clinical nurse specialist, geriatrician, cardiologist, physical therapist, occupational therapist, and eye doctor), and implementation of targeted and individualized fall prevention strategies are encouraged.
- Individuals with an average score of 30 seconds or greater on the Timed "Up & Go" Test have variable mobility and are considered to have a high risk of future falls. A comprehensive fall evaluation (See Step 3 below) to identify individual fall risk factors is strongly recommended. Fall prevention strategies, referral to appropriate specialists for further assessment and treatment (for example, gerontological nurse practitioner, clinical nurse specialist, geriatrician, cardiologist, physical therapist, occupational therapist, and eye doctor), and implementation of targeted and individualized fall prevention strategies are strongly encouraged. Use of protective devices, such as hip protectors, should be considered.

If no gait or balance problem is identified on the Timed "Up & Go" Test or other brief screening tool, NO FURTHER ASSESSMENT OR INTERVENTION IS REQUIRED. A review of individual fall risk factors (See Appendix A: Fall Risk Factors Checklist) may be considered for older adults with a low to moderate risk (Score 19 or less). Offer information about fall prevention strategies. Reassess fall history and fall potential in one year or if a fall occurs.

If a gait or balance problem is identified (Score $\geq$20), complete the Comprehensive Fall Evaluation (Step 3).

For residents of long-term care facilities, the gait and balance testing procedures are slightly different. The MDS 2.0 User´s Manual (Morris, Murphy & Nonemaker, 1995; Brown et al., 2000) offers detailed testing alternatives. See the MDS 2.0 User´s Manual pages 3-91 to 3-95 for more information on balance testing and Resident Assessment Protocol (RAP) 11 Falls, page 3 for gait testing.

Comprehensive Fall Evaluation (Step 3)

For older adults who report recurrent falls in the past year, who present to the health care provider/facility following a fall, or who are identified as having gait or balance problems on the Timed "Up & Go" Test (Score $\geq$20) (Podsiadlo & Richardson, 1991), conduct a comprehensive fall evaluation. The purpose of the comprehensive fall evaluation is to describe the circumstances surrounding recent falls, identify fall risk factors, delineate modifiable and non-modifiable risk factors, assess functional status, and target fall prevention strategies ("Guideline for the prevention of falls," 2001. Evidence Grade = A).

Referral to a specialist (e.g., gerontological nurse practitioner, clinical nurse specialist, geriatrician, physical therapist, occupational therapist, cardiologist, eye doctor) for a comprehensive fall evaluation or for particular components of the evaluation may be required ("Guideline for the prevention of falls," 2001. Evidence Grade = A).

The comprehensive falls evaluation is discussed in detail below. A registered nurse or advanced practice nurse may complete the comprehensive falls evaluation. Components of this assessment that may require advanced diagnostic training are noted. Briefly, the comprehensive falls evaluation includes the following components:

- Fall History, Fall Circumstances, and Fall Risk Factors Assessment
- Health History and Functional Assessment
- Medications and Alcohol Consumption Review
- Vital Signs and Pain Assessment
- Vision Screening
- Gait and Balance Screening and Assessment
- Musculoskeletal and Foot Assessment
- Continence Assessment
- Cardiovascular Assessment
- Neurological Assessment
- Depression Screening
- Walking Aids, Assistive Technologies, & Protective Devices Assessment
- Environmental Assessment

- Falls Assessment in Long-Term Care: RAP Triggers

1. Fall History, Fall Circumstances, and Fall Risk Factors Assessment

   Information about fall history, fall circumstances, and fall risk factors can help determine a person´s potential for falling and identify which risk factors can be changed (modifiable risk factors such as medications, uncorrected sensory impairments, or poorly fitted shoes) from those which cannot be altered (non-modifiable risk factors such as a history of falls, age, or gender). The Fall Risk Factor Checklist (Appendix A in the original guideline document) may be useful for documenting the presence of common fall risk factors.

   - Ask about the occurrence of falls during the past year (see Step 1: Fall History).
   - Identify the circumstances surrounding any fall(s) that occurred during the past year (see Step 2: Fall Potential.) For individuals who are experiencing recurrent falls, the Falls Diary (Appendix E in the original guideline document) may be useful for identifying fall patterns.
   - Note history of falls or tripping (Blake et al., 1988; Covinsky et al., 2001; Kiely et al., 1998; Tromp et al., 2001. Evidence Grade = C).
   - Note anxiety or fear of falling (Tinetti, Mendes de Leon et al., 1994. Evidence Grade = C). The Falls Self-Efficacy Scale may help determine the types of activities an older adult avoids related to a fear of falling (Tinetti, Richman, & Powell, 1990. Evidence Grade = C).
   - Note number of fall risk factors: a greater number of risk factors predict higher risk (Robbins et al., 1989; Tinetti et al., 1988. Evidence Grade = C).
   - Determine whether a fall risk factor is modifiable or non-modifiable in order to target fall and individualize prevention strategies (Robbins et al., 1989; Tinetti et al., 1988. Evidence Grade = C).

2. Health History and Functional Assessment

   Information about past health history and functional status can help health professionals determine the appropriateness of fall prevention interventions.

   - Acute illness (Kuehn & Sendelweck, 1995. Evidence Grade = C)
   - Chronic health problems (see assessments below for conditions associated with falls) including:
     a. Sleep problems (Brassington et al., 2000. Evidence Grade = C)
     b. Sensory deficits (i.e., visual, auditory, vestibular) (Tinetti et al., 1995. Evidence Grade = C)
   - Advanced age (Vlahov, Myers, & Al-Ibrahim, 1990. Evidence Grade = C)
   - Gender: higher prevalence in females (Blake et al., 1988. Evidence Grade = C)
     a. Female gender: Medication use (total number of drugs, psychotropic drugs, and drugs liable to cause postural hypotension), standing systolic blood pressure of less than 110 mmHg, and evidence of muscle weakness (Campbell, Spears, & Borrie, 1989. Evidence Grade = C)

b. Male gender: Decreased levels of physical activity, stroke, arthritis of the knees, gait impairment, and increased body sway (Campbell, Spears, & Borrie, 1989. Evidence Grade = C)

- Functional dependence
  a. Functional status using the Katz Index of Independence in Activities of Living Scale (Katz et al., 1970) or other functional assessment tool
  b. Assess ability to transfer safely (McLean & Lord, 1996; Nyberg & Gustafson, 1995. Evidence Grade = C)

3. Medications and Alcohol Consumption Review

Some medications are thought to increase the chance of a fall. Assessment and modification of medications and alcohol consumption is an important feature of any fall prevention program.

- Review current prescription medications.
- Review over-the-counter medications, dietary supplements, and recreational drug use.
- Review alcohol consumption, including amount, frequency, and any relationship between alcohol consumption and falls (Malmivaara et al., 1993. Evidence Grade = C).
- Monitor for recent changes in medication regimen.
- Monitor for drug side effects, such as drowsiness, dizziness, daytime sedation, changes in bladder or bowel function, impaired balance and reaction time, or hypotension (Campbell, 1991. Evidence Grade = D).
- Monitor for polypharmacy: Taking more than 3 or 4 medications a day is an increased risk for falls (Leipzig, Cummings, & Tinetti, "Cardiac and analgesic drugs," 1999; Leipzig, Cummings, & Tinetti, "Psychotropic drugs," 1999; Tinetti, Baker, et al, 1994. Evidence Grade = A).
- If the individual is taking medications from any of the following drug classifications, he or she is at an increased risk for falls:
  a. Any central nervous system/psychotropic drug (Agostini, Baker, & Bogardus, 2001; Campbell et al., 1999; Leipzig, Cummings, & Tinetti, "Psychotropic drugs," 1999. Evidence Grade = A)
     - Sedatives/hypnotics (Agostini, Baker, & Bogardus, 2001; Leipzig, Cummings, & Tinetti, "Psychotropic drugs," 1999. Evidence Grade = A)
     - Antidepressants
       - Tricyclic antidepressants (Leipzig, Cummings, & Tinetti, "Psychotropic drugs," 1999. Evidence Grade = A)
       - Selective serotonin-reuptake inhibitors (Thapa et al., 1998. Evidence Grade = C)
     - Antipsychotics/neuroleptic agents
       - Increased risk in non-psychiatric inpatient (Leipzig, Cummings, & Tinetti, "Psychotropic drugs," 1999. Evidence Grade = A)
     - Benzodiazapines (Agostini, Baker, & Bogardus, 2001)

- No difference in short/long acting drugs (Leipzig, Cummings, & Tinetti, "Psychotropic drugs," 1999. Evidence Grade = A)
- Higher risk in very short/short acting drugs (Passaro et al., 2000. Evidence Grade=C)

b. Cardiovascular drugs ((Leipzig, Cummings, & Tinetti, "Cardiac and analgesic drugs," 1999. Evidence Grade = A)
   - Diuretics
   - Antiarrhythmics
   - Cardiac glycosides

c. Antidiabetic agents (Passaro et al., 2000. Evidence Grade = C)

4. Vital Signs & Pain Assessment

Alterations in a person´s vital signs, including the presence of pain, may indicate an acute illness, injury, or inflammatory process, any of which may make an older adult more vulnerable to falling.

- Presence of pain, assessed with a standardized pain assessment tool tested for use with older adults, such as a verbal descriptor scale, numeric rating scale, or faces pain scale (Herr & Mobily, 1993; Herr et al., 1998)
- Change in temperature indicative of signs of infection or inflammation
- Change in respiratory rate and rhythm suggestive of infection or inflammation
- Abnormal heart rate and rhythm that may suggest cardiac dysfunction
- Orthostatic hypotension (Agostini, Baker, & Bogardus, 2001). Assess pulse and blood pressure in the lying, sitting, and standing positions.
  a. Note presence of orthostatic hypotension (an immediate drop of $\geq$20 mm of systolic blood pressure after moving from a supine to a sitting position or standing position).
  b. While research has suggested that orthostatic hypotension may not be a good predictor of falling for healthy, community-dwelling older adults (Liu et al., 1995. Evidence Grade = C), current fall prevention guidelines recommend the measurement of postural pulse and blood pressure in older adults at risk for falling (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A).

5. Vision Screening

Visual problems contribute to an individual´s fall risk (Ivers et al., 1998; Kamel, Guro-Razuman, & Shareef, 2000; Lord & Dayhew, 2001. Evidence Grade =C).

- Note eye problems including cataracts, glaucoma, diabetic neuropathy, or macular degeneration.
- Note history of and/or current problems with poor visual acuity, reduced visual field, impaired contrast sensitivity, depth perception, or distant-edge-contrast sensitivity.
- Note date and results of most recent eye examination.
- Note whether vision correction devices are clean, well-fitted, regularly and appropriately worn.
- Assess visual acuity, particularly near vision acuity, with the Rosenbaum pocket vision screener.

6. Gait & Balance Screening & Assessment

   A simple gait and balance screening can identify individuals who would benefit from the comprehensive fall evaluation.

   - Results from the Timed "Up & Go" Test (Appendix C in the original guideline document) (Podsiadlo & Richardson, 1991) or the MDS gait and balance assessments (Morris, Murphy, & Nonemaker, 1995; Brown et al., 2000)
   - For individuals who show gait or balance problems on the gait and balance screening tests (Timed "Up & Go" Test), conduct an in-depth gait and balance assessment (See Appendix F in the original guideline document) (Tinetti, 1986).

7. Musculoskeletal and Foot Assessment

   Individuals with musculoskeletal changes or foot problems may have difficulty walking, which in turn can lead to problems with falling.

   - Note presence of osteoarthritis, especially of the knees (Blake et al., 1988. Evidence Grade = C).
   - Note presence of lower extremity amputation (Vlahov, Myers, & Al-Ibrahim, 1990. Evidence Grade = C).
   - Note presence of foot problems (corn, calluses, bunion) (Blake et al., 1988. Evidence Grade = C).
   - Note presence of skeletal/joint deformities or fractures.
   - Assess disability of lower extremities, including reduced strength, sensation, or balance.
   - Assess lower limb joints, including range of motion.

8. Continence Assessment

   Persons with urinary or fecal incontinence and other kinds of urinary tract symptoms may be at increased risk of falling (Bakarich, McMillan, & Prosser, 1997; Brown et al., 2000; Stevenson et al., 1998. Evidence Grade = C).

   - Note presence or history of any type of urinary incontinence and/or fecal incontinence.
   - Note diagnosis of urge incontinence or overactive bladder.
   - Note presence of symptoms such as urinary frequency, urgency, or rushing to the toilet.
   - Note presence of nocturia.

- Note current use of medication for the treatment of incontinence or overactive bladder.
- Note current use of diuretics ((Leipzig, Cummings, & Tinetti, "Cardiac and analgesic drugs," 1999. Evidence Grade = A).

9. Cardiovascular Assessment

Several cardiovascular conditions, referenced below, are found more often in older adults who have experienced a fall (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed, 2000).

- Note history of cardiovascular disease and/or cardiac dysfunction (e.g., arrhythmias, valve disease, myocardial infarction, heart blocks, etc.).
- Note current use of cardiovascular drugs including diuretics, antiarrhythmic agents, and/or cardiac glycosides/digoxin (Leipzig, Cummings, & Tinetti, "Cardiac and analgesic drugs," 1999. Evidence Grade = A).
- Note reports of syncope, faintness, dizziness, or blackouts (Blake et al., 1988; O'Mahony & Foote, 1998. Evidence Grade = C).
- Note reports of drop attacks and/or diagnoses associated with drop attacks (Dey, Stout, & Kenny, 1997; O'Mahony & Foote, 1998. Evidence Grade = B)
    a. Cardioinhibitory carotid sinus syndrome (CSS), mixed CSS, vasodepressor CSS, orthostatic hypotension, or vasovagal syncope
- Note reports of postprandial (after a meal) hypotension (Aronow & Ahn, 1994; Aronow & Ahn, 1997. Evidence Grade = B).
- Assess for cardiac arrhythmias, carotid bruits, or heart murmurs.
- Assess heart rate and blood pressure responses to carotid sinus stimulation, as appropriate. (Note: Requires advanced diagnostic training)

10. Neurological Assessment

Neurological conditions, especially those that cause alterations in an individual´s gait, balance, level of consciousness, or cognitive status are commonly associated with falls (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed., 2000. Evidence Grade = A).

- Note history of cerebrovascular accident/stroke (Vlahov, Myers, & Al-Ibrahim, 1990. Evidence Grade = C).
- Note history of transient ischemic attacks (TIA).
- Note history of epilepsy/seizure disorder.
- Note history of neurological diseases associated with gait disorders (Parkinson´s disease, muscular dystrophy, multiple sclerosis, normal pressure hydrocephalus).

- Note history of other neurologic disorders (cervical or lumbar spondylosis, cerebellar disease, brain lesions, peripheral neuropathy).
- Note history of dementia, impaired cognition, or impaired mental status.
    a. Dementia with Lewy bodies (Ballard et al., 1999. Evidence Grade = C)
- Note history or presence of vestibular dysfunction (vertigo, dizziness).
- Note presence of muscle rigidity, spasticity, tremors, or involuntary movements.
- Assess peripheral innervation (sensitivity to light touch, pain, temperature, vibration).
- Assess proprioception/cerebellar function

    a. Romberg test: able to stand with eyes closed and feet together without swaying for 5 seconds
    b. Heel-to-shin: able to run heel of each foot down the opposite shin
- Assess grip strength of dominant and non-dominant hand.

    a. Reduced grip strength in dominant hand (Blake et al., 1988. Evidence Grade = C)
- Conduct a cognitive status screening using the Mini-Mental State Exam (MMSE) (Folstein, Folstein, & McHugh, 1975) or other assessment instrument.

11. Depression Screening

Antidepressant medications have been noted to increase the risk of falling in older adults (see below). Therefore, a depression screening (For further information, see the Evidence-Based Protocol: "Detection of Depression in the Cognitively Intact Older Adult" by Piven, 1998) can be useful for determining fall risk.

- Note history or current diagnoses of depression.
- Note current use of antidepressant medications.
    a. Tricyclic antidepressants (Leipzig, Cummings, & Tinetti, "Psychotropic drugs," 1999. Evidence Grade = A)
    b. Selective serotonin-reuptake inhibitors (Thapa et al., 1998. Evidence Grade = C)
- Conduct depression screening.

    a. For cognitively intact older adults (MMSE score of 23 or greater), use a depression assessment tool such as the Geriatric Depression Scale (Yesavage et al., 1982-83).
    b. For cognitively impaired older adults (MMSE score of 22 or less), use a depression assessment tool such as Cornell Scale for Depression in Dementia (Alexopoulos et al., 1988).

12. Walking Aids, Assistive Technologies, & Protective Devices Assessment

    Appropriate and correct use of walking aids and other devices is a component of any fall intervention program for older adults (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed, 2000. Evidence Grade = A).

    - Note use of walking aids (e.g., canes, walkers, crutches, merry walkers).
    - Note use of other assistive technologies (e.g., wheelchairs, motorized scooters) (Nyberg & Gustafson, 1995. Vlahov, Myers, & Al-Ibrahim, 1990. Evidence Grade = C).
    - Note use of protective devices (e.g., hip protectors, helmets).
    - Note use of footwear with respect to slippery soles and how well they fit (Connell & Wolf, 1997. Evidence Grade = C).
    - Assess assistive and protective devices for proper fitting and signs of wear or damage.
    - Assess correct use of walking aids, assistive technologies, and protective devices.

13. Environmental Assessment

    Older adults cite tripping and slipping as two of the most common reasons for a fall (Blake et al., 1988. Evidence Grade = C). Physical hazards are often involved. An environmental assessment can often identify modifiable risk factors, such as rugs, floor mats, a lack of handrails in toilets, or clutter, that contribute to falls in older adults. The following are environmental factors that <u>increase risk</u> of falling or are interventions in which the potential harm outweighs the benefits, such as use of physical restraints and side-rails (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed, 2000).

    - Use of physical restraints (Agostini, Baker, & Bogardus., 2001; "Guideline for the prevention of falls," 2001; Arbesman, & Wright, 1999. Evidence Grade = A)
    - Use of bedrails/side rails (Hanger, Ball, & Wood, 1999; Mosley et al., 1998. Evidence Grade = B)
    - Lack of handrails in strategic locations. Consider: height, location, availability, use (Isberner et al., 1998. Evidence Grade = C)
    - Slippery and glaring floor surfaces (Isberner et al., 1998. Evidence Grade = C)
    - Snow, ice, cold weather, or slippery outdoor surfaces (Bulajic-Kopjar, 2000; Campbell, et al., 1988. Evidence Grade = C)
    - Temporary environmental hazards such as equipment in hallways (Connell & Wolf, 1997. Evidence Grade = C)
    - Inadequate lighting (Connell & Wolf, 1997; McLean & Lord, 1996. Evidence Grade = C)
    - Uneven flooring (Isberner et al., 1998. Evidence Grade = C)
    - Loose throw rugs, frayed carpets, cords, and wires (Tideiksaar, 2002. Evidence Grade = D)

- Cracked and uneven sidewalks (Tideiksaar, 2002. Evidence Grade = D)
- Facilities (toilets, tubs) and furniture with inappropriate height for transfers (Fleming & Pendergast, 1993. Evidence Grade = C)

14. Falls Assessment in Long-Term Care: Resident Assessment Protocol (RAP) Triggers

    For residents of long-term care facilities, the Long-Term Care MDS and Resident Assessment Protocol (RAP) can be used to guide a comprehensive fall evaluation. Specific assessment criteria from the FALLS RAP TRIGGERS section of the MDS are provided in the original guideline document.

Description of Interventions

Fall prevention strategies that are implemented will depend upon the findings of the multidimensional falls assessment, individual fall risk factors, and the resources available to the older adult and/or his or her caregivers. Following the COMPREHENSIVE FALL EVALUATION, the health professional has a rich source of information with which to plan targeted fall prevention strategies that are individualized for each person and based on the presence of fall risk factors. While referring to the completed Falls Risk Factors Checklist (Appendix A in the original guideline document), the health professional can discuss with the older adult and/or caregiver the most likely risk factors contributing to his or her risk of falling and begin planning nursing interventions to prevent falls.

Fall prevention programs that combine exercise with risk factor modification and those based upon an interdisciplinary comprehensive falls evaluation appear to be the most effective for reducing falls in older adults (Agostini, Baker, & Bogardus, 2001; Hill-Westmoreland, Soeken, & Spellbring, 2002. Evidence Grade = A).

Implement Fall Prevention Interventions (Step 4)

Fall prevention interventions that address modifiable fall risk factors are suggested by specific settings below (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed, 2000. Evidence Grade = A). Information is included for older adults living in community settings, residents of long-term care or assisted living facilities, and elders in acute care settings. Following the specific settings information is an overview of specific fall prevention interventions which includes information on 1) comprehensive fall evaluation and treatment of health problems, 2) medication review and modification, 3) improving physical mobility: exercise programs, balance and gait training, and appropriate use of walking aids, 4) environmental management, 5) staff education programs, 6) continence promotion and toileting programs, 7) physical restraint reduction, and 8) preventing fall-related injuries with protective devices.

Interventions For Older Adults Living In The Community

Fall prevention interventions for persons living in the community focus on three areas: 1) improving physical mobility, 2) decreasing medication side effects, and 3) treating underlying health conditions. Studies conducted with community-dwelling older persons support the following interventions (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A):

- Gait training and advice on the appropriate use of assistive devices (Close et al., 1999; Tinetti, Baker, et al., 1994. Evidence Grade = B)
- Review and modification of medications, including psychotropic medications
    a. Reduction in the number and dosages of prescribed medications (Campbell et al., 1999; Close et al., 1999; Tinetti, Baker, et al., 1994. Evidence Grade = B)
- Exercise and balance training programs (Campbell et al., 1999; Steinberg et al., 2000; Tinetti, Baker, et al., 1994. Evidence Grade = B)
- Assessment and treatment for any identified health problems (Close et al., 1999. Evidence Grade = B)

    a. Treatment of postural hypotension (Close et al., 1999; Tinetti, McAvay, & Claus, 1996. Evidence Grade = B)
    b. Treatment of cardiovascular disorders (Close et al., 1999. Evidence Grade = B)
    c. Treatment of visual problems (Close et al., 1999. Evidence Grade = B)
- Modification of environmental hazards (Cumming et al., 1999; Tinetti et al., 1994. Evidence Grade = B)

Interventions For Older Adults Living In Long-Term Care Or Assisted Living Facilities

Fall prevention interventions for persons living in long-term care or assisted living facilities focus on five areas: 1) identifying fall risk factors through a comprehensive fall evaluation, 2) improving management of falls through staff education programs, 3) improving physical mobility, 4) decreasing medication side effects, and 5) modifying the physical environment.

Studies of interventions to prevent falls among older persons living in long-term care facilities support the use of the following interventions ("Guideline for the prevention of falls," 2001; Ray et al., 1997; Rubenstein et al., 1990. Evidence Grade = B):

- Comprehensive fall evaluation (Ray et al., 1997; Rubenstein et al., 1990. Evidence Grade = B)
- Improvement in room lighting, flooring, and footwear (Agostini, Baker, & Bogardus, 2001; Ray et al., 1997. Evidence Grade = B)
- Staff education programs (Ray et al., 1997. Evidence Grade = B)
- Wheelchair use and maintenance by an occupational therapist (Ray et al., 1997. Evidence Grade = B)
- Gait training and advice on appropriate use of assistive devices (Ray et al., 1997. Evidence Grade = B)

- Review and modification of medications, including psychotropic medications (Ray et al., 1997. Evidence Grade = B)

Interventions For Older Adult Patients In Acute Hospital Settings

Research on multi-component fall prevention programs in the hospitalized setting suffer from small sample sizes and methodological issues (Agostini, Baker, & Bogardus, 2001. Evidence Grade = A). A meta-analysis of hospital-based fall prevention programs revealed that pooling the effects from three controlled trials resulted in no effect – that is no benefit in reducing falls (Oliver, Hopper, & Seed, 2000. Evidence Grade = A). This same meta-analysis demonstrated that pooling the effects from seven prospective studies with historical controls, fall rates declined by about 25% (Oliver, Hopper, & Seed, 2000. Evidence Grade = A). The interventions employed in these studies were heterogeneous and often several interventions were employed simultaneously (Oliver, Hopper, & Seed, 2000). In studies in hospitalized settings, practices included educational activities for nurse and support staff, patient orientation activities, review of prior falls, and improvement of surrounding environment. Specific environmental components included reducing physical obstacles in rooms, adding supplemental lighting and grab bars in bathrooms, and lowering bedrails and bed height. Other studies have attempted to improve transfer and mobility by scheduled ambulatory and physical therapy activities and provision of better footwear. Studies also incorporated interventions for cognitively impaired patients through education of families, minimizing sedating medications, and locating confused patients close to nursing staff. Because many of these studies used small sample sizes and lacked precise standardization and description of the interventions, the generalizability and reproducibility of findings are limited (Agostini, Baker, & Bogardus, 2001. Evidence Grade = A).

Fall prevention strategies that are commonly used in acute care settings, including wristbands or over-bed stickers to identify persons at high risk for falls, bed alarms, or physical restraints, show little benefit for reducing falls in hospitalized older adults (Oliver, Hopper, & Seed, 2000. Evidence Grade = A). Fall prevention programs that identify an individual´s fall history and fall risk with subsequent implementation of targeted modifiable risk factors may help prevent falls in hospitalized older adults ("Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed, 2000). In addition, ensuring that hospital units are staffed adequately so that nurses and assistive personnel are available to assist older adults with transfers, toileting, and other basic physical needs should be a priority (Blegen, Vaughn, & Goode, 2001. Evidence Grade = C).

Agostini, Baker, & Bogardus (2001) note that in the hospital, several interventions have been employed as part of multiple risk factor intervention studies, but many have been poorly described and standardized. Practices include educational activities for nurse and support staff, patient orientation activities, review of prior falls, and improvement of the surrounding environment.

<u>Specific Fall Prevention Interventions</u>

Major interventions that have been recommended as fall prevention strategies for older adults include: 1) comprehensive fall evaluation and treatment of health problems, 2) medication review and modification, 3) improving physical mobility: exercise programs, balance and gait training, and appropriate use of walking aids, 4) environmental modification, and 5) continence promotion and toileting programs. A brief overview of each intervention, as well as information on physical restraint reduction and preventing fall-related injuries with protective devices, is provided. Educating direct care givers who assess fall risk and initiate individualized interventions is an important component of fall reduction. Educational programs for the staff involved in fall prevention are necessary but not sufficient to reduce falls (Ray et al., 1997).

Comprehensive Fall Evaluation and Treatment of Health Problems

The most important steps in any fall prevention program are to identify persons who have previously experienced a fall, determine the potential for future falls, and outline and reduce individual fall risk factors ("Guideline for the prevention of falls," 2001; Hill-Westmoreland, Soeken, & Spellbring, 2002. Evidence Grade = A). This is accomplished through the baseline fall screening, comprehensive fall evaluation, and ongoing treatment of health problems (Close et al., 1999; Ray et al., 1997; Rubenstein et al., 1990; Tinetti, McAvay, & Claus, 1996; Hill-Westmoreland, Soeken, & Spellbring, 2002. Evidence Grade = B). Older adults at risk for falls cannot benefit from targeted fall prevention interventions unless underlying health conditions are identified and will not benefit unless these conditions are treated. Common health conditions if left untreated in older adults that contribute to fall risk include postural hypotension (Close et al., 1999; Tinetti, McAvay, & Claus, 1996. Evidence Grade = B), cardiovascular disorders (Close et al., 1999. Evidence Grade = B), visual problems (Close et al., 1999. Evidence Grade = B), and urinary incontinence (Bakarich, McMillan, & Prosser, 1997. Evidence Grade = C).

Identification of high risk patients through bracelets, signs or tags have been incorporated in multifactorial interventions to prevent falls (Agostini, Baker, & Bogardus, 2001; Oliver, Hopper, & Seed, 2000). A randomized controlled study on use of colored bracelets to identify high-risk inpatients did not demonstrate a statistically significant treatment effect; thus there is no evidence that use of such an identification system reduces falls (Agostini, Baker, & Bogardus, 2001; Oliver, Hopper, & Seed, 2000). Use of such identification systems might, in fact, adversely affect rehabilitation and promotion of functional independence by causing stigma and anxiety among patients and their family members (Oliver, Hopper, & Seed, 2000). Although this strategy is used in fall prevention programs, there is little evidence to demonstrate the effect on reduction of falls (Agostini, Baker, & Bogardus, 2001; Oliver, Hopper, & Seed, 2000. Evidence Grade = A).

Medication Review and Modification

Reduction of the number of medications has been a component of many multifactorial fall prevention programs conducted in a variety of settings (Campbell et al., 1999; Close et al., 1999; Tinetti, Baker, et al., 1994; Ray et

al., 1997. Evidence Grade = B). Review of medications without modification appears to be of little benefit ("Guideline for the prevention of falls," 2001. Evidence Grade = A). Older adults who have fallen should have their medications reviewed and altered or stopped as appropriate. Whenever possible, health care providers should consider reducing medications for older adults who take four or more medications and for those who take psychotropic medications (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A).

Although several studies have included medication review and adjustment as part of multifaceted interventions, the independent effect of this intervention on fall outcomes has not been reported (Agostini, Baker, & Bogardus, 2001).

Improving Physical Mobility: Exercise Programs, Balance Training, Gait Training, and Appropriate Use of Walking Aids

Exercise programs, gait and balance training, and appropriate use of assistive devices and walking aids have been shown to be important strategies to prevent falls for older adults ("Guideline for the prevention of falls," 2001; Campbell, Borrie, & Spears, 1989; Gardner, Robertson, & Campbell, 2000; Gillespie et al., 2002; Hill-Westmoreland, Soeken, & Spellbring, 2002; Province et al., 1995. Evidence Grade = A). The benefits of improving physical mobility and endurance through any of these interventions alone as a fall prevention intervention, without concurrent reduction of other fall risk factors, has not been supported (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A). Exercise programs that have been offered as fall prevention strategies in older adults include walking, balance training, resistance/strength training, aerobics, stationary cycling, and Tai Chi C´uan. Exercise programs that have a minimum duration of at least 10 weeks are more successful than shorter programs ("Guideline for the prevention of falls," 2001. Evidence Grade = A). Exercise programs must be sustained for sustained benefits ("Guideline for the prevention of falls," 2001. Evidence Grade = A). Minimization of bed rest in hospitalized elders is a practical, real-world intervention that has implications for prevention of falls as well as other hospital-acquired complications (Agostini, Baker, & Bogardus, 2001).

To learn more about exercise programs for older adults, please see the Gerontological Nursing Interventions Research Centers Research Dissemination Core Evidence-Based Protocols: "Exercise Promotion: Walking in Elders," by Jitramontree (2001) and "Progressive Resistance Training" by Mobily and Mobily (2002) or the National Institute on Aging (1998) for an educational program entitled Exercise: A Guide From the National Institute on Aging.

Environmental Modification

Assessment and modification of environmental hazards is often suggested as a fall prevention strategy. Unfortunately, research studies of environmental hazard modification have had small samples and insignificant statistical results (Abreu et al., 1998; El-Faizy & Reinsch, 1994. Evidence Grade = C). Larger studies have failed to support environmental modification alone as a

fall prevention strategy (Peel, Steinberg, & Williams, 2000; Sattin et al., 1998; van Haastregt et al., 2000. Evidence Grade = B), although as a component of multifactorial fall prevention intervention, environmental modification may help decrease fall risk in some older adults (Cumming et al., 1999; Gillespie et al., 2002; Ray et al., 1997; Steinberg et al., 2000. Evidence Grade = B).

To learn more about environmental modifications strategies for fall prevention, contact the National Center for Injury Prevention and Control on the Internet at http://www.cdc.gov/ncipc or by phone at 770-488-1506. The following brochures are available free of charge and provide an overview of home safety measures to prevent falls in older adults:

- Check for Safety: A Home Fall Prevention Checklist for Older Adults (099-6156)
- Check for Safety (Spanish) (099-6590)
- What YOU Can Do to Prevent Falls (Spanish) (099-6589)
- What YOU Can Do to Prevent Falls, 1999 (099-6018)

Continence Promotion and Toileting Programs

Older adults with urinary incontinence are at risk of falling (Bakarich, McMillan, & Prosser, 1997; Brown et al., 2000; Hendrich et al., 1995; Janken, Reynolds, & Swiech, 1986; Stevenson et al., 1998. Evidence Grade = C). In acute care settings, falls occur during toileting activities (Bakarich, McMillan, & Prosser, 1997; Janken Reynolds, & Swiech, 1986; Stevenson et al., 1998. Evidence Grade = C), while in long-term care, falls occur in private locations such as bathrooms, during activities of daily living (e.g., toileting), and when residents report being unable to wait for staff assistance (Fleming & Pendergast, 1993; Hakim, 1998. Evidence Grade = C). A continence assessment to determine type and severity of urinary incontinence and/or fecal incontinence and type-specific treatment of any incontinence is a suggested component of a fall prevention program for older adults. Older adults in acute care settings may benefit from a toileting program (Bakarich, McMillan, & Prosser, 1997. Evidence Grade = B) as may older adults with functional and/or cognitive challenges. For further information about prompted voiding programs for older adults, please see the Evidence-Based Protocol "Prompted Voiding for Persons with Urinary Incontinence" (Lyons & Specht, 1999).

Preventing Fall-Related Injuries with Protective Devices (Hip Protectors, Alarms)

Use of hip protectors does not seem to reduce the risk of falling, but there is strong evidence to support the ability of hip protectors to prevent hip fractures in persons 65 years of age and older, in nonhospitalized settings, who fall (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001; Parker, Gillespie, & Gillespie, 2002. Evidence Grade = A). Most studies have been done in community dwelling settings or nursing homes; the efficacy in hospitalized settings has not been reported (Agostini, Baker, & Bogardus, 2001). The principle of wearing hip protectors is to absorb the impact of a fall and reduce the risk of fracture by shunting the energy away

from the hip region (Agostini, Baker, & Bogardus, 2001). Hip protectors are usually made of hard plastic pads or shields that are padded or constructed with foam-type materials. They fit into specially designed pockets in undergarments or pants. Long-term compliance of wearing hip-protectors is low, and the potential harm of skin irritation and skin breakdown are unknown (Agostini, Baker, & Bogardus, 2001). While the use of hip protectors has been shown to improve fall self-efficacy scores in older adults (Cameron et al., 2000. Evidence Grade = B), widespread acceptance of hip protectors by nursing home residents has been low (Hubacher & Wettstein, 2001. Evidence Grade = B).

A commonly used "protective device" is the bed or wheelchair alarm. The purpose of these devices is to alert staff when an individual who is at risk for falls is rising from a bed or chair. There is no evidence that use of bed alarms reduces falls, and may, in fact, provide a false sense of security for staff regarding fall prevention (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed, 2000). Implementation requires adequate staffing to respond in a timely manner to the alarms (Agostini, Baker, & Bogardus, 2001). Considering the cost associated with purchase of bed alarms, with no evidence of their benefit (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A), it is unclear why these devices continue to be used as a fall prevention intervention. There is insufficient evidence to recommend use of bed alarms as a fall prevention strategy for hospitalized older adults (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed, 2000. Evidence Grade = A).

Physical Restraints and Falls in Older Adults

The Health Care Financing Administration defines physical restraints as "any manual method or physical or mechanical device, material, or equipment attached or adjacent to the patient that the individual cannot remove easily which restricts freedom of movement or normal access to one´s body" (Agostini, Baker, & Bogardus, 2001, p. 287). There is no scientific evidence that supports the use of physical restraints as a fall prevention strategy for older adults (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A).

While some care providers may believe that an older adult is at less risk of falling and hurting him- or herself when wearing a restraint, the opposite is actually true. Older adults who are restrained are more likely to experience a fall than those who are not restrained (Capezuti et al., 1996. Evidence Grade = C). Restraint reduction programs do not seem to cause a significant increase in the total number of falls and may reduce the number and/or seriousness of injuries sustained during a fall (Agostini, Baker & Bogardus, 2001; Hanger, Ball, & Wood, 1999; Neufeld et al., 1999; Tinetti, Liu, & Ginter, 1992. Evidence Grade = C). In addition, some restraints, such as bedrails, have been implicated in serious entrapment injuries or deaths (Parker & Miles, 1997. Evidence Grade = C).

There is growing evidence that physical restraints (bedrails and mechanical restraints) have a limited role in healthcare (Agostini, Baker, & Bogardus,

2001). Restraints limit physical mobility and increase risk of iatrogenic events (Agostini, Baker, & Bogardus, 2001). For further information on developing restraint reduction programs, please see the evidence-based practice protocol entitled "Restraints" by Ledford and Mentes (1997).

For step 5, "Evaluation: Process and Outcome Indicators", refer to the "Implementation" field.

Definitions:

Rating Scheme for Strength of Evidence

A = Evidence from well-designed meta-analysis

B = Evidence from well-designed controlled trials, both randomized and nonrandomized, with results that consistently support a specific action (e.g., assessment, intervention or treatment)

C = Evidence from observational studies (e.g., correlational descriptive studies) or controlled trials with inconsistent results

D = Evidence from expert opinion or multiple case reports

CLINICAL ALGORITHM(S)

An algorithm, Fall Prevention in Older Adults, is provided in the original guideline document.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Prevention of falls among elderly patients while maintaining autonomy and independence

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This evidence-based practice is a general guideline. Patient care continues to require individualization based on patient needs and requests.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Evaluation (Step 5): Process and Outcome Indicators

Evaluation is an important part of any intervention program. In order to determine the effectiveness of this protocol for identifying persons at risk for falls and for preventing falls and/or fall-related injuries in older adults, process and outcome factors must be evaluated. Fall-related outcomes should be selected based upon the individual´s, providers´, and the organization´s goals.

Process Indicators

Process indicators are interpersonal and environmental factors that can facilitate the use of an evidence-based practice guideline. Three tools for assessing process indicators are included in this protocol:

The Fall Prevention For Older Adults Knowledge Assessment Test (Appendix H in the original guideline document) measures staff knowledge about falls and should be assessed before and after staff education on the use of this protocol.

The Process Evaluation Monitor (Appendix I in the original guideline document) determines the provider´s perception of his/her own knowledge and use of fall reduction strategies as well as the administrative support he/she receives for carrying out the protocol. It is recommended that health care providers using the protocol fill out the monitor approximately one month after initiation of the protocol and then on an at least yearly basis.

The Fall Prevention For Older Adults Quality Improvement Monitor (Appendix J in the original guideline document) aids in tracking the falls outcomes per patient/resident. Use this monitor on a weekly basis during the first month of the intervention, and then at least once a month following this initial month to determine whether falls and fall assessments are being documented in the health record.

Other process indicators that may influence the use the Fall Prevention for Older Adults protocol include:

- Correct use of assistive devices
- Use of precautions when taking medications that increase risk of falls
- Decreased use of psychotropic medications
- Use of safe transfer procedures

Outcome Indicators

Outcome indicators are factors expected to change or improve with consistent and appropriate use of the Fall Prevention in Older Adults evidence-based practice guideline and include:

- Decreased number of falls
- Decreased number and severity of fall-related injuries

Several tools for assessing outcome indicators are included in this protocol:

The Patient/Resident Fall Rate and Injury Rate (Appendix G in the original guideline document) must be calculated prior to protocol implementation to provide a baseline comparison rate and at specified time periods following implementation of the protocol.

The Fall Prevention For Older Adults Quality Of Care Monitor (Appendix K in the original guideline document) aids in tracking fall-related clinical outcomes at the organizational level. Completion of this monitor is recommended on a quarterly basis to calculate facility-wide fall rates and to determine whether fall screening and assessments are being completed on all patients/residents.

For information about specific patient/resident outcomes, refer to the Nursing Outcomes Classification (Iowa Outcomes Project, 2000) (Appendix L in the original guideline):

- Safety Status: Falls Occurrence
- Safety Behavior: Fall Prevention
- Safety Behavior: Home Physical Environment

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Lyons SS. Fall prevention for older adults. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; 2004 Feb. 60 p. [104 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

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1996 (revised 2004 Feb)

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Not stated

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

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GUIDELINE AVAILABILITY

Electronic copies: Not available at this time.

Print copies: Available from the University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core, 4118 Westlawn, Iowa City, IA 52242. For more information, please see the University of Iowa Gerontological Nursing Interventions Research Center Web site.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

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